

NATURE'S

Grapevine

WASHINGTON CROSSING STATE PARK, NJ

Autumn 2020

Stealth Pollinators of the Night

By
Elizabeth Tomkins

Moths are in the insect order Lepidoptera, which also includes their relatives the butterflies. Insects categorized as Lepidoptera have a similar life cycle that includes an egg, larvae (caterpillar), pupa and adult stage. Adult Lepidopterans have a unique siphoning mouthpart called a proboscis. With its flexible structure similar to a straw, a proboscis makes it easy for a butterfly or moth to access and drink nectar, an important source of food. As larvae, butterflies and moths are equipped with chewing mouthparts and can be found munching on the leaves of plants for energy as they grow. Some larvae are pickier than others – larvae that eat only one type of plant are called “specialists”, while larvae interested in more than one are “generalists”.

Although they are found in the same order, differences between butterflies and moths become visible as their larvae develop into pupae. A distinctive characteristic of most moth pupae is the construction of a protective layer of silk (sometimes combined with natural materials such as leaves) (PNW Moths, n.d.). This additional layer covers the soft shell of the pupa, reducing exposure to outside factors as the larva transforms within. The term “cocoon” is used to describe a moth pupa, while “chrysalis” refers to a butterfly pupa (PNW Moths, n.d.).



photo credit: Wayne Henderik

Polyphemus moth



photo credit: Wayne Henderik

Hummingbird Clearwing Moth

A closer look beneath a microscope or magnifying glass can reveal even more about these creatures. The structure of a moth's antennae can be described as feathered, while a butterfly has a long stalk with a ball on the end (PNW Moths, n.d.). Tympanate “ears” are found on the abdominal segment of moths. In comparison, these eardrum-like membranes are located closer to the wings of butterflies (Spreng, 2016). Composed of the tympanum (layer of skin that vibrates from pressure), tracheal sac (responsible for increasing vibration frequency in tympanum) and tympanal organ (transcribes signals to the nervous system), the tympanate structure enables the insect to understand and interact with its surroundings (Spreng, 2016).

For species of moths that are nocturnal, the ability to detect predators in the night sky is extremely important for survival. Research has shown that moths can not only recognize echolocation signals of bats, but can produce signals at similar ultrasound frequencies (Spreng, 2016). This tactic can distract and confuse a bat long enough for the moth to escape. Tiger moths (in the family Arctiidae) have an additional sound producing organ called a tymbal, which they use to send out warning signals to predators that they are toxic (Spreng, 2016). Other moths with a tymbal utilize it to communicate with potential mates of their own species (Spreng, 2016).

The majority of moths, however, utilize pheromones (chemical substances secreted from the body) to relay messages to each other. Male moths within the large silkworm family



(Bombycidae) have been known to travel almost 30 miles to locate a female moth, simply by following her pheromone trail (Smithsonian Institution, n.d.). Reliance on pheromones can at times be tricky for a moth. It has been found that in an effort to catch prey, species of bolas (orb-weaver) spiders produce pheromones similar to female moths to attract unsuspecting males (Smithsonian Institution, n.d.).



photo credit: Wayne Henderek

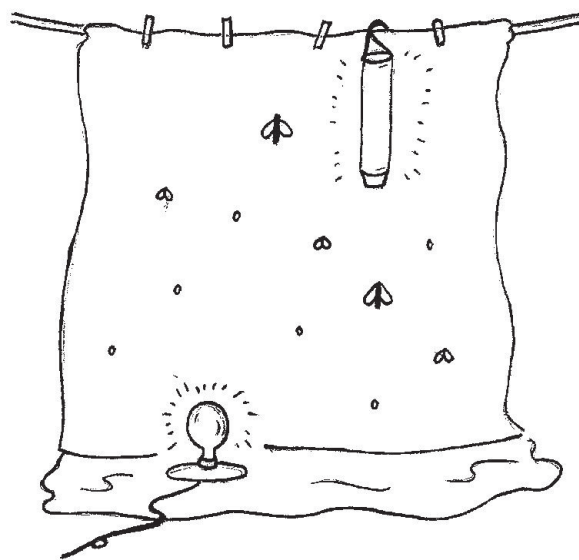
At around 4 - 5 inches in length, the hickory horned devil makes for an imposing-looking caterpillar. It is actually the larva of the royal walnut moth and is quite harmless.

While it is commonly assumed that all moths are nocturnal in nature, certain species are diurnal, or active during the day. This includes species such as the hummingbird clearwing moth (*Hemaris thysbe*) (Neff, 2019). The physical features and movements of this particular moth, with a wing shape, tail and wing beat (speed) comparable to a hummingbird, provide a creative disguise as it collects nectar from flowers of plants such as beebalm (Neff, 2019). The hummingbird clearwing moth is just one of many species that can be found within the state of New Jersey. Moths are beneficial to ecosystems because of their natural ability to pollinate flowering plants, even after dark when other pollinators are resting. They are also a source of food for other creatures.

Certain species such as the eastern tent caterpillar (*Malacosoma americanum*) and gypsy moth (*Lymantria dispar*) are not viewed favorably by humanity. The larvae of these moths consume their food at an alarming rate, causing significant defoliation of trees (PNW Moths, n.d.). Tree defoliation is a problem because it puts stress on trees, making them more

susceptible to being harmed by disease or other insects – similar to a weakened immune system (NYSDEC, n.d.). In New Jersey, the gypsy moth is a more serious pest because of its status as an invasive species (introduced from Europe) and because as a generalist, it feeds on a wide variety of tree and shrub species with a preference for oak (NJDEP, n.d.). Eastern tent caterpillars are native to North America, prefer fruit trees such as black cherry and apple and do not cause nearly as much harm (NYSDEC, n.d.).

Although some species of moths are visible during the day, many of these fascinating creatures can only be seen in the evening. During warmer nights in the late summer and early autumn, setting up a white sheet in your backyard or a wooded area with a source of light can attract a wide variety of insects and moths that are otherwise more difficult to observe. Another way to attract moths is to brush a mixture of sugar, fermenting fruit (such as banana) and beer onto a tree trunk before the sun sets (Friends of EBEC, n.d.).



graphic by the author

A variety of nocturnal moths can easily be attracted with a suspended sheet and a bright light after dark in mid-summer through early autumn.

As temperatures begin to drop, certain moths prepare to lay their eggs. Although this may sound counterproductive after spring and summer have passed, larvae tucked away in cocoons can overwinter and remain dormant until warmth returns to the earth again to emerge on their own (AMNH, 2013). Larvae of other species such as the Isabella tiger moth (*Pyrarhactia isabella*) do not form cocoons, but are insulated during the fall and winter with thick hairs and stay warm beneath layers of leaf litter (AMNH, 2013). While hiking through a quiet forest in autumn, the discovery of moth cocoons is not only a reminder of the many fascinating behaviors of this insect, but a promise of new life and energy when spring returns.

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Elizabeth Tomkins worked as a seasonal employee at WCSP this past summer and assisted with visitor services. Elizabeth is beginning her fourth year studying Environmental Management as an undergraduate at SUNY Cobleskill. She is originally from Holland, PA.

Volunteer Notes

Michael Rahtz, Titusville, undertook a landscaping project in cooperation with our friends group, **Washington Crossing Park Assn. of New Jersey** (WCPA). Michael dressed up the grounds around the Nature Center by planting native shrubs and ferns near the building entrance and rest rooms. The project greatly improves the appearance of the building as viewed from the parking area. Thank you Michael! Thank you WCPA!

Washington Crossing Audubon generously donated 400 lbs. of bird seed for park feeding operations.

Ellen Coleman, Ewing, assisted with our ax throwing and fishing events.

Several members of the **Amateur Astronomers Association of Princeton** came out on Labor Day Weekend to set up their personal equipment and give visitors to the park an up-close look at the sun.

Bob Hughes, Hamilton Twp., of **Bob's Buzzy Bees** donated a colony of honeybees to the Nature Center for our observation beehive in anticipation of the building eventually opening to visitors. Until then, the beehive is visible through the window on the rear of the building. Please use caution when looking for the beehive. Honeybees will be coming and going through a small opening under the window.

Paul Moran, Allentown, NJ, came out over the course of the spring and summer to brush trails.

Scout **Joey DeLauretis**, Lawrenceville, and members of his **Boy Scout Troop #27** constructed a battery of ten bog bridges and installed them over a perennial wet spot on the Red Trail. Joey accomplished this in partial fulfillment of the requirements for the rank of Eagle Scout. The bridges will remedy a long-standing problem area for folks walking this section of the trail. Nice job guys!

This newsletter is available free of charge electronically. It can be downloaded at the web address below. Requests to be included on the emailing list may be made by contacting the Nature Center.



Nature
CENTER

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Sun 12:00 p.m. - 4:00 p.m.
Closed Mon and Tues

Website.....www.state.nj.us/dep/parksandforests/parks/washcros.html

Park Naturalist

& Newsletter Editor.....Wayne Henderek



Around the Park

✿ Buildings in the park, including the Nature Center, Visitor Center Museum and the Johnson Ferry House have been closed to the public during the spring and summer months and remain so at this writing, due to ongoing public health considerations. Nevertheless, WCSP has been quite busy with visitors on our trails and grounds. Some park rest rooms are open daily on a restricted basis. Please call the main park number at (609) 737- 0623 for more information.

✿ Outdoor public events are ongoing as of this past August. Please see the enclosed events schedules for details.

✿ Outdoor interpretive programs for schools, scouts, home-schoolers and other groups are also ongoing on a limited basis. Please call the Nature Center (609-737-0609), the Visitor Center/Museum (609-737-0623), or the Johnson Ferry House (609-737-2515) for additional information.



Featured Program

The WCSP Nature Center has been offering a new recreational program over the past several months. It is on our schedule of public events for the autumn and will be in the near future as well. **Tomahawk Throwing** is being offered at the target range behind the Nature Center building. Tomahawks are small hand axes that are thrown toward a wooden target at a range of about 15 ft. The object is to hit the bull's-eye in such a way that the tomahawk sticks in the target. Instruction will be available. The activity is a cross between throwing darts and horseshoe pitching but, is arguably way more fun than either. As with all our programs, the activities will take place as weather permits. It is always advisable to call ahead if the weather is questionable. Please see the enclosed program schedule for details. Tomahawk throwing will be available to adult visitors only.



Autumn Programs at the Nature Center

The following is a list of activities being offered through the Nature Center at Washington Crossing State Park in Titusville, New Jersey. These programs are offered free of charge unless otherwise indicated. All programs this autumn will require advanced registration so that we can manage social distancing. Face coverings are required at all these events. Attendance is limited and is available on a first-come, first-served basis. All children must be accompanied by an adult. All programs will initially meet at the Nature Center unless otherwise indicated. In the event of inclement weather, some programs might be canceled. It is always advisable to call ahead before coming out. These events are available to families and individuals only. Programs for scouts, schools, home school groups and other groups are available and scheduled separately by special arrangement. **Phone: (609) 737-0609**

FULL MOON BIKE HIKE (pre-teen-adult) Friday October 2, 7:45 p.m. Take a guided night time bicycle ride, by the light of the Harvest Moon, up the Delaware & Raritan Canal Towpath toward the Lambertville wing dam (approx. 13 miles round trip). Meet at the Nelson House parking lot. Bring your own bike, bike light and helmet. Advanced registration required. Call the Nature Center for directions. Free.

FAMILY NATURE WALK (all ages) Sunday October 4, 1:30 – 2:30 p.m. Join us for an informal naturalist-guided trail walk. Free

TOMAHAWK THROWING (adults) Sunday October 11, 1:30 -3:30 p.m. Come on out and try your hand at sticking a tomahawk or small hatchet into a target at about 15 ft. Maybe even hit a bull's-eye. Free.

HIKE MILFORD BLUFFS (pre-teen-adult) Sunday October 18, 10:00 a.m. – 2:00 p.m. Milford Bluffs in Holland Twp., is a relatively recent acquisition to the state park system. It contains mature hardwood forests, agricultural fields and interesting rock outcrops. The terrain is gently rolling and rugged with commanding views of the Delaware Valley. Wear sturdy shoes, bring drinking water and lunch. The hike will be 2-3 miles in length. Meet at Niederer's Pond on Church Rd. We will carpool (approx. 45 min ride) to the preserve (call the Nature Center for directions). Advanced registration required. Free.

PARK FOLIAGE HIKE (9 yrs. - adult) Sunday October 25, 1:30 - 4:00 p.m. This is a naturalist-guided 3 1/2 - 4 mile hike taking on the park's natural and historic areas, and several interesting and remote sections of the park during the fall foliage season. Wear sturdy footwear. Bring drinking water, a snack and a pair of binoculars (if you wish). Free

FAMILY NATURE WALK (all ages) Sunday November 1, 1:30 – 2:30 p.m. Join us for an informal naturalist-guided trail walk. Free.

SHELTER BUILDING WILDERNESS SURVIVAL (6 yrs. - adult) Sunday November 15, 1:30 – 3:00 p.m. This program will deal with the fundamentals pertaining to survival when lost in the wild. Participants will construct a weatherproof shelter completely from native materials. Advanced registration and payment required. Fee: \$2.00/person, children under 6 yrs. Free.

GEOCACHE WASHINGTON CROSSING STATE PARK (preteens – adult) Sunday November 22, 1:30 – 3:30 p.m. Geocaching is a high-tech update on the old-fashioned scavenger hunt game, which utilizes GPS (global positioning system) technology to locate objects hidden in the park. Participants will learn how to obtain information and hints from the Geocaching.com website, on the location of dozens of geocache sites in and around the state park. They will then use handheld GPS devices to go out and find as many caches as possible. Once a cache is found, participants typically will sign in on the log contained within and then take an object from the cache box after leaving a trinket for subsequent geocachers. Participants should bring a pocket full of trinkets to exchange when they locate caches. Trinkets can include small toys and balls, plastic jewelry, pens, pencils, scratch pads, patches, action figures, coins, etc. A limited number of GPS navigation devices will be made available to participants on a first come, first served basis. Bring your own handheld GPS device or smart phone with Geocaching app installed if you have one. Advanced registration and payment required. Fee: \$2.00/person (exact change please).

NATURE CENTER CLOSED Mon. Nov. 23 - Tues. Dec 1
Have a Happy Thanksgiving

More WCSP events next page

Nature Center events continued

HOLIDAY WREATH MAKING (all ages) Saturday December 12, 1:00 - 3:30 p.m. Participants will construct their own wreaths from evergreen clippings collected in the park. Advanced registration required. Fee: \$10.00/wreath (exact change please). **NOTE: It might be necessary to conduct this event outdoors this year. Please dress for the weather.**

NATURE CENTER CLOSED Thurs. Dec 24, 2020 - Tues. Jan 5, 2021
Have a Happy Holiday Season

**Autumn Programs
at the
Visitor Center Museum
(609) 737-0623**

MUSKET FIRING DEMONSTRATIONS Fridays & Saturdays October 2, 3, 9, 10, 16, 23, 24, 30 & 31 at 2:00 p.m. Join a Park Historian for an interpretive talk about some of the weapons used during the American Revolution and their use during the Battle of Trenton. Included will be a musket firing demonstration.

